

REMARKS

In response to the Office Action mailed November 3, 2008, Applicants respectfully request reconsideration based on the amendments herein and the following remarks. Applicants respectfully submit that the claims as presented herein are in condition for allowance.

Claims 1-7, 9-12, 14, 16-22 and 24-27 are pending in the present application. Claims 1, 7, 14 and 20 have been amended and claims 5 and 11 have been canceled. No new matter has been added by the amendments. Specifically, support for the amendments can be found at least in FIGS. 4-8 and at paragraphs [0052], [0061] and [0069] of the application as filed.

Applicants respectfully request reconsideration of claims 1-5, 6, 7, 9-10, 12, 14, 16-22 and 24-27 based upon the amendments and at least the following remarks.

Claim Rejections Under 35 U.S.C. §103

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art and that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Claims 1, 5, 20, 24 and 27 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Amundson et al. (U.S. Patent No. 6,545,291, hereinafter “Amundson”) in view of Ihida et al. (U.S. Patent No. 7,075,603, hereinafter “Ihida”).

Regarding independent claims 1 and 20, the Examiner states that Amundson teaches all of the elements thereof except “entire lengths of opposing edges defining a first side and a second side of the first pixel electrode along the second direction between the first gate line and the second gate line overlap the first data line and the second data line, respectively”, which the Examiner further states is taught by Ihida, primarily in FIG. 1. Applicants respectfully traverse for at least the following reasons.

It is respectfully noted that independent claims 1 and 20 (as well independent claims 7 and 14, discussed below) have been amended to recite, *inter alia*, that the present invention further comprises “a thin-film transistor comprising: a source electrode connected to the first data line; a gate electrode connected to the first gate line; and a drain electrode connected to the first pixel electrode, wherein...the first pixel electrode covers only the drain electrode of the thin-film transistor”.

Applicants further note that Amundson discloses, e.g., at FIGS. 3 and 4A through 5B, a pixel electrode (320), a portion of which overlaps both a source electrode (S) and a gate electrode (110) of a thin film transistor (“TFT”). Likewise, Ihida discloses, primarily in FIGS. 1-11, a pixel electrode 11 which completely overlaps each of a gate electrode (2), a source electrode (5) and a drain electrode (6) of a TFT (17).

In contrast and in accordance with the present invention, as shown at least in FIGS. 4-8 and recited in claims 1 and 20, the pixel electrode (191) overlaps only the drain electrode (175) of the TFT.

Therefore, neither Amundson nor Ihida, alone or in combination, teach or suggest “a thin-film transistor comprising: a source electrode connected to the first data line; a gate electrode connected to the first gate line; and a drain electrode connected to the first pixel electrode, wherein...the first pixel electrode covers only the drain electrode of the thin-film transistor”, as in amended independent claims 1 and 20.

Thus, it is respectfully submitted that independent claims 1 and 20, including claims depending therefrom, i.e., claims 2-4, 6, 21-22, 24 and 27 define over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 1, 20, 24 and 27 under 35 U.S.C. 103(a) be withdrawn.

Claims 14 and 26 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hasegawa et al. (U.S. Patent No. 7,173,602, hereinafter “Hasegawa”) in view of Hanazawa (U.S. Patent No. 5,953,088, hereinafter “Hanazawa”) and further in view of Ihida. Specifically, the Examiner states that Hasegawa discloses all of the elements of independent claim 14 except “a first pixel electrode disposed in a first region restricted by the first gate line, the second gate line, the first data line and the second data line and a second pixel electrode disposed in a second region adjacent to the first region”, which the Examiner further states is taught by Hanazawa,

primarily in FIG. 3. In addition the Examiner states that Hasegawa fails to teach “entire lengths of opposing edges defining a first side and a second side of the first pixel electrode along the second direction between the first gate line and the second gate line overlap the first data line and the second data line”, which the Examiner further states is taught by Ihida, primarily at FIG. 1. Applicants respectfully traverse for at least the following reasons.

It is respectfully noted that claim 14 has been amended (in a similar manner as claims 1 and 20, described above) to further describe and differentiate the claimed invention over the cited prior art. Thus, amended claim 14 discloses that the first pixel electrode overlaps, e.g., covers, only the drain electrode of the thin film transistor. In contrast, Hasegawa teaches a pixel electrode which does not overlap the TFT at all (FIG. 8) or, alternatively, a pixel electrode which overlaps a gate electrode and drain electrode (FIG. 9). Likewise, Hanazawa and Ihida teach that the pixel electrode overlaps other portions of the TFT, e.g., source and drain electrodes (FIGS. 5 and 12 of Hanazawa) or the entire TFT itself (FIGS. 1-11 of Ihida).

Therefore, neither Hasegawa nor Hanazawa nor Ihida, alone or in any combination thereof, teach or suggest “the first pixel electrode covers only the drain electrode of the thin-film transistor” as in amended independent claim 14.

Thus, it is respectfully submitted that independent claim 14, including claims depending therefrom, i.e., claims 16-19 and 26, define over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 14 and 26 under 35 U.S.C. 103(a) be withdrawn.

Claims 7, 11 and 25 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Drzaic (U.S. Patent No. 6,518,949, hereinafter “Drzaic ‘949”) in view of Ihida. The Examiner states that Drzaic ‘949 discloses all of the elements of independent claim except “entire lengths of opposing edges defining a first side and a second side of the first pixel electrode along the second direction between the first gate line and the second gate line overlap the first data line and the second data line, respectively”, which the Examiner further states is disclosed by Ihida, primarily at FIG. 1. Applicants respectfully traverse for at least the following reasons.

It is respectfully noted that claim 7 has been amended (in a similar manner as claims 1, 14 and 20, described above) to further describe and differentiate the claimed invention over the

cited prior art. Thus, amended claim 7 discloses that the first pixel electrode overlaps, e.g., covers, only the drain electrode of the thin film transistor. In contrast, both Drzaic '949 and Ihida teach pixel electrodes which overlap additional portions of TFTS, as shown in FIG. 1A-1C and 6-10 of Drzaic '949 (wherein pixel electrodes overlap gate electrodes and source/drain electrodes), as well as in FIGS. 1-11 of Ihida (discussed above with reference to claims 1, 14 and 20).

Therefore, neither Drzaic '949 nor Ihida, alone or in combination, teach or suggest "a first pixel electrode disposed over only the first drain electrode of the first thin film transistor" as in amended independent claim 7.

Thus, it is respectfully submitted that independent claim 7, including claims depending therefrom, i.e., claims 9-10, 12 and 25, define over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 7 and 25 under 35 U.S.C. 103(a) be withdrawn.

Claims 2 and 21 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Amundson in view of Ihida and further in view of Hanazawa. The Examiner states that Amundson in view of Ihida discloses all of the elements of claims 2 and 21 except "a second pixel electrode disposed in a second region adjacent to the first region, wherein the second pixel electrode comprises a first side and a second side opposite the first side, and one of the first data line and the second data line overlaps an entire length of an edge of the second pixel electrode defining one of the first side of the second pixel electrode and the second side of the second pixel electrode", which the Examiner further states is disclosed by Hanazawa, primarily in FIG. 3. Applicants respectfully traverse for at least the following reasons.

Independent claims 1 and 20, from which claims 2 and 21, respectively, depend, are submitted as being allowable for defining over Amundson in view of Ihida, as discussed above. Furthermore, it is respectfully submitted that "a second pixel electrode disposed in a second region adjacent to the first region, wherein the second pixel electrode comprises a first side and a second side opposite the first side, and one of the first data line and the second data line overlaps an entire length of an edge of the second pixel electrode defining one of the first side of the second pixel electrode and the second side of the second pixel electrode", allegedly taught by

Hanazawa or any other disclosure of Hanazawa does not cure the deficiency noted above with respect to Amundson in view of Ihida.

Thus, it is respectfully submitted that claims 2 and 21 define over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 2 and 21 under 35 U.S.C. 103(a) be withdrawn.

Claims 3, 6 and 22 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Amundson in view of Ihida and further in view of Yamamoto (U.S. Patent No. 6,563,260, hereinafter “Yamamoto”). The Examiner states that Amundson in view of Ihida discloses all of the elements of claims 3, 6 and 22 except “the insulating layer having a dielectric constant lower than 4, with the insulating layer being made of a-Si:C:O or a-Si:O:F”, which the Examiner further states is disclosed by Yamamoto, primarily at column 13, lines 48-50 and 59-64, and FIG. 3. Applicants respectfully traverse for at least the following reasons.

Independent claims 1 and 20, from which claims 3, 6 and 22 depend, are submitted as being allowable for defining over Amundson in view of Ihida, as discussed above. Furthermore, it is respectfully submitted that “the insulating layer having a dielectric constant lower than 4, with the insulating layer being made of a-Si:C:O or a-Si:O:F”, allegedly taught by Yamamoto or any other disclosure of Yamamoto does not cure the deficiency noted above with respect to Amundson in view of Ihida.

Thus, it is respectfully submitted that claims 3, 6 and 22 define over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 3, 6 and 22 under 35 U.S.C. 103(a) be withdrawn.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Amundson in view of Ihida and further in view of Izumi et al. (U.S. Patent No. 7,148,867, hereinafter “Izumi”). The Examiner states that Amundson in view of Hanazawa discloses all of the elements of claim 4 except “the data line is made of a metal selected from a group consisting of Mo, Mo alloy, Cr, Ta and Ti”, which the Examiner further states is disclosed primarily in FIG. 1B, column 8, lines 10-13 of Izumi.

Independent claim 1, from which claim 4 depends, is submitted as being allowable for defining over Amundson in view of Ihida as discussed above. Furthermore, it is respectfully

submitted that “the data line is made of a metal selected from a group consisting of Mo, Mo alloy, Cr, Ta and Ti”, allegedly taught by Izumi or any other disclosure of Izumi does not cure the deficiency noted above with respect to Amundson in view of Ihida.

Thus, it is respectfully submitted that claim 4 is patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claim 4 under 35 U.S.C. 103(a) be withdrawn.

Claims 9 and 12 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Drzaic ‘949 in view of Ihida and further in view of Yamamoto. The Examiner states that Drzaic ‘949 in view of Ihida discloses all of the elements of the abovementioned claims except “the insulating layer having a dielectric constant smaller than 4 with the insulating layer being made of a-Si:C:O or a-Si:O:F”, which the Examiner further states is disclosed primarily in FIG. 3, column 13, lines 59-64 and column 13, lines 48-50 of Yamamoto.

Independent claim 7, from which claims 9 and 12 depend, is submitted as being allowable for defining over Drzaic ‘949 in view of Ihida as discussed above. Furthermore, it is respectfully submitted that “the insulating layer having a dielectric constant smaller than 4 with the insulating layer being made of a-Si:C:O or a-Si:O:F” allegedly taught by Yamamoto or any other disclosure of Yamamoto does not cure the deficiency noted above with respect to Drzaic ‘949 in view of Ihida.

Thus, it is respectfully submitted that claims 9 and 12 are patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 9 and 12 under 35 U.S.C. 103(a) be withdrawn.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Drzaic ‘949 in view of Ihida and further in view of Izumi. The Examiner states that Drzaic in view of Ihida discloses all of the elements of claim 10 except “the data line is made of a metal selected from a group consisting of Mo, Mo alloy, Cr, Ta and Ti”, which the Examiner further states is disclosed primarily in FIG. 1B, column 8, lines 10-13 of Izumi.

Independent claim 7, from which claim 10 depends, is submitted as being allowable for defining over Drzaic ‘949 in view of Ihida as discussed above. Furthermore, it is respectfully

submitted that “the data line is made of a metal selected from a group consisting of Mo, Mo alloy, Cr, Ta and Ti” allegedly taught by Izumi or any other disclosure of Izumi does not cure the deficiency noted above with respect to Drzaic ‘949 in view of Ihida.

Thus, it is respectfully submitted that claim 10 is patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claim 10 under 35 U.S.C. 103(a) be withdrawn.

Claims 16 and 19 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hasegawa in view of Ihida and further in view of Yamamoto. The Examiner states that Hasegawa in view of Ihida discloses all of the elements of claims 16 and 19 except “the insulating layer has a dielectric constant smaller than 4”, which The Examiner further states is disclosed primarily in FIG. 3, column 9, lines 9-19 and column 13, lines 59-64 of Yamamoto.

Independent claim 14, from which claims 16 and 19 depend, is submitted as being allowable for defining over Hasegawa in view of Ihida as discussed above. Furthermore, it is respectfully submitted that “the insulating layer has a dielectric constant smaller than 4” allegedly taught by Yamamoto or any other disclosure of Yamamoto does not cure the deficiency noted above with respect to Hasegawa in view of Ihida.

Thus, it is respectfully submitted that claims 16 and 19 are patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claims 16 and 19 under 35 U.S.C. 103(a) be withdrawn.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hasegawa in view of Hanazawa in further view of Ihida and further in view of Izumi. The Examiner states that Hasegawa in view of Hanazawa in further view of Ihida discloses all of the elements of claim 17 except “the data line is made of a metal selected from a group consisting of Mo, Mo alloy, Cr, Ta and Ti”, which the Examiner further states is disclosed primarily in FIG. 1B, column 8, lines 10-13 of Izumi.

Independent claim 14, from which claim 17 depends, is submitted as being allowable for defining over Hasegawa in view of Ihida, as discussed above. Furthermore, it is respectfully submitted that “the data line is made of a metal selected from a group consisting of Mo, Mo

alloy, Cr, Ta and Ti” allegedly taught by Izumi or any other disclosure of Izumi does not cure the deficiency noted above with respect to Hasegawa in view of Ihida.

Thus, it is respectfully submitted that claim 17 is patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claim 17 under 35 U.S.C. 103(a) be withdrawn.

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hasegawa in view of Hanazawa in further view of Ihida and further in view of Hirota (U.S. Patent No. 7,098,980, hereinafter “Hirota”). The Examiner states that Hasegawa in view of Hanazawa in further view of Ihida discloses all of the elements of claim 18 except “the inclination angle of the gate line or the data line relative to the surface of the substrate ranges between about 20 degrees to about 80 degrees”, which the Examiner further states is disclosed primarily in FIG. 5, column 5, lines 28-34 and 65-67 of Hirota.

Independent claim 14, from which claim 18 depends, is submitted as being allowable for defining over Hasegawa in view of Ihida as discussed above. Furthermore, it is respectfully submitted that “the inclination angle of the gate line or the data line relative to the surface of the substrate ranges between about 20 degrees to about 80 degrees” allegedly taught by Hirota or any other disclosure of Hirota does not cure the deficiencies noted above with respect to Hasegawa in view of Ihida.

Thus, it is respectfully submitted that claim 18 is patentable over the cited references.

Accordingly, it is respectfully requested that the rejection of claim 18 under 35 U.S.C. 103(a) be withdrawn.

Conclusion

In view of the foregoing remarks distinguishing the prior art of record, Applicants submit that this application is in condition for allowance. Early notification to this effect is requested. The Examiner is invited to contact Applicants' Attorneys at the below-listed telephone number regarding this Amendment or otherwise regarding the present application in order to address any questions or remaining issues concerning the same. If there are any charges due in connection with this response, please charge them to Deposit Account 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: /James J. Merrick/
James J. Merrick
Registration No. 43,801
Noah J. Hayward
Registration No. 59,515
Confirmation No. 7218
Cantor Colburn LLP
20 Church Street, 22nd floor
Hartford, CT 06103-3207
Telephone (860) 286-2929
Customer No. 23413

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